Commercial and Industrial Designers

(O*NET 27-1021.00)

Significant Points

- Commercial and industrial designers usually work closely with engineers, materials scientists, marketing and corporate strategy staff, cost estimators, and accountants.
- About 1 out of 3 are self-employed.
- A bachelor's degree in industrial design, architecture, or engineering is required for entry-level positions; however, many commercial and industrial designers choose to pursue a master's degree in either industrial design or business administration.
- Keen competition is expected for most jobs because many qualified individuals are attracted to careers in this field; those with strong backgrounds in engineering and computer-aided design, as well as extensive business expertise, will have the best prospects.

Most commercial and industrial designers use computer-aided industrial design software to prepare conceptual product diagrams.

Nature of the Work

Commercial and industrial designers combine the fields of art, business, and engineering to design the products used every day by businesses and consumers. These designers are responsible for the style, function, quality, and safety of most manufactured goods. Usually these designers will specialize in one particular product category. Some specialties include automobiles and other transportation vehicles, appliances, technology goods, medical equipment, furniture, toys, tools and construction equipment, and housewares.

The first steps in developing a new design, or altering an existing one, are to determine the requirements of the client, the ultimate function for which the design is intended, and its appeal to customers or users. When creating a new design, designers often begin by researching the product user or the context in which the product will be used, and desired product characteristics, such as size, shape, weight, color, materials used, cost, ease of use, fit, and safety. Designers gather this information by meeting with clients, conducting market research, reading design and consumer publications, attending trade shows, and visiting potential users, suppliers and manufacturers.

Designers then prepare conceptual sketches or diagrams—by hand or with the aid of a computer—to illustrate the vision for the design. After conducting research and consulting with a creative director or other members of the product development team, designers then create detailed sketches or renderings. Many designers use computer-aided design (CAD) tools to create and better visualize the final product. Computer models allow ease and flexibility in exploring a greater number of design alternatives, thus reducing design costs and cutting the time it takes to deliver a product to market. Industrial designers who work for manufacturing firms also use computer-aided industrial design (CAID) tools to create designs and machine-readable instructions that communicate with automated production tools. Often, designers will create physical models out of clay, wood, and other materials to give clients a better idea of what the finished product will look like.

Designers then present the designs and prototypes to their client or managers and incorporate any changes and suggestions. Designers also will work with engineers, accountants, and cost estimators to determine if the product could be made safer, easier to assemble or use, or cheaper to manufacture. Designers also may participate in usability and safety tests with prototypes in order to make further adjustments to the design before it goes to manufacturing.

Commercial and industrial designers also work with marketing staff to develop plans to best market the new product or design to consumers. Increasingly, designers are working with corporate strategy staff to ensure that their designs fit into the company's business plan and strategic vision. This involves designing new products that accurately reflect the company's image and values. It also involves identifying and designing products that best fit consumers' needs before a competitor markets a similar product. Increasingly, designers must focus on creating innovative products in addition to considering the style and technical aspects of the product.

Working Conditions

Working conditions and places of employment vary. Designers employed by manufacturing establishments, large corporations, or design firms generally work regular hours in well-lighted and comfortable settings. Designers in smaller design consulting firms, or those who freelance, may work on a contract, or job, basis. They frequently adjust their workday to suit their clients' schedules and deadlines, meeting with the clients during evening or weekend hours when necessary. Consultants and self-employed designers tend to work longer hours and in smaller, more congested, environments. Additional hours may be required in order to meet deadlines.

Designers may transact business in their own offices or studios or in clients' homes or offices. They also may travel to other locations, such as testing facilities, design centers, clients' exhibit sites, user's homes or workplaces, and manufacturing facilities. With the increased speed and sophistication of computers and advanced communications networks, designers may form international design teams, serve a geographically more dispersed clientele, research design alternatives by using information on the Internet, and purchase supplies electronically.

Training, Other Qualifications, and Advancement

A bachelor's degree in industrial design, architecture, or engineering is required for most entry-level commercial and industrial design positions. Many candidates in industrial design also pursue a master's degree in order to increase their employment opportunities. Creativity and technical knowledge are crucial in this occupation. People in this field also must have a strong

sense of the esthetic—an eye for color and detail and a sense of balance and proportion. Designers must understand the technical aspects of how the product functions. Despite the advancement of computer-aided design, sketching ability remains an important advantage. A good portfolio—a collection of examples of a person's best work—often is the deciding factor in getting a job.

Bachelor's of fine arts or bachelor's of science degrees in industrial design are granted at many colleges and universities, and in private art and design schools. Baccalaureate curriculum includes principles of design, sketching, computer-aided design, industrial materials and processes, manufacturing methods, and some coursework in engineering, physical science, mathematics, psychology, and anthropology. Many programs also include internships in design or manufacturing firms.

Commercial and industrial designers also may pursue a master's degree in industrial design. With the growing emphasis on strategic design and how products fit into the overall business plan, an increasing number of designers are pursing a master's degree in business administration in order to gain valuable business skills. Also, a growing number of professionals in other industries, such as marketing and information technology, are entering the industrial design field by pursuing advanced degrees in design.

The National Association of Schools of Art and Design accredits about 250 postsecondary institutions with programs in art and design. Approximately 45 of these schools award a degree in industrial design. Many schools require the successful completion of 1 year of basic art and design courses before formal entry into a bachelor's degree program. Applicants also may be required to submit sketches and other examples of their artistic ability.

Employers increasingly expect new designers to be familiar with computer-aided design software as a design tool. Designers must also be creative, imaginative, and persistent and must be able to communicate their ideas in writing, visually, and verbally. Because tastes in style can change quickly, designers need to be well read, open to new ideas and influences, and quick to react to changing trends. Problem-solving skills and the ability to work independently and under pressure also are important traits. People in this field need self-discipline to start projects on their own, to budget their time, and to meet deadlines and production schedules.

As strategic design becomes more important, employers will seek designers with project management skills and knowledge of accounting, marketing, quality assurance, purchasing, and strategic planning. Good business sense and sales ability also are important, especially for those who freelance or run their own business.

Beginning commercial and industrial designers usually receive on-the-job training and normally need 1 to 3 years of training before they can advance to higher level positions. Experienced designers in large firms may advance to chief designer, design department head, or other supervisory positions. Some designers leave the occupation to become teachers in design schools or in colleges and universities. Many faculty members continue to consult privately or operate small design studios to complement their classroom activities. Some experienced designers open their own design firms.

Employment

Commercial and industrial designers held about 49,000 jobs in 2004. About 1 out of 3 were self-employed. About 13 percent of designers were employed in either engineering or specialized design services firms. Manufacturing companies employed the rest of commercial and industrial designers, with the largest number employed in aerospace products and parts manufacturing.

Job Outlook

Employment of commercial and industrial designers is expected to grow about as fast as the average for all occupations through 2014. Employment growth will arise from an expanding economy and from an increase in consumer and business demand for new or upgraded products. However, competition for jobs will be keen because many talented individuals are attracted to the design field. The best job opportunities will be in specialized design firms which are used by manufacturers to design products or parts of products. Designers with strong backgrounds in engineering and computer-aided design, as well as extensive business expertise, may have the best prospects.

Increasing demand for commercial and industrial designers will stem from the continued emphasis on the quality and safety of products, the increasing demand for new products that are easy and comfortable to use, and the development of high-technology products in consumer electronics, medicine, transportation, and other fields. However, employment can be affected by fluctuations in the economy. For example, during periods of economic downturns, companies may cut research and development spending, including new product development.

Increasingly, manufacturers have been outsourcing design work to design services firms in order to cut costs and to find the most qualified design talent. Additionally, some companies use design firms located overseas, especially for design of high-technology products. These overseas design firms are located closer to their suppliers, which reduces the time it takes to design and sell a product—an important consideration when technology is changing quickly. Offshoring of design work, particularly for high-technology products, could continue to have a negative impact on domestic employment of commercial and industrial designers.

Despite the increase in design work performed overseas, most design jobs—particularly jobs not related to high-technology product design—will still remain in the U.S. because design is essential to a firm's success, and firms will want to retain control over the design process. As the demand for design work becomes more consumer-driven, designers also will need to closely monitor, and react to, changing customer demands. Designers will increasingly have to come up with innovative new products in order to stay competitive. Domestic designers also will be required to work with marketing and strategic planning staffs to design products that will be more usable and appealing to consumers and that accurately define a company's image and brand.

Earnings

Median annual earnings for commercial and industrial designers were $52,310 in May 2004. The middle 50 percent earned between $39,130 and $68,980. The lowest 10 percent earned less than $29,080, and the highest 10 percent earned more than $86,250.

Related Occupations

Workers in other art and design occupations include artists and related workers; fashion designers; floral designers; graphic designers; and interior designers. Some other occupations that require computer-aided design skills are architects, except landscape and naval; computer software engineers; desktop publishers; drafters; and engineers.

Sources of Additional Information

For general career information on commercial and industrial design, contact:

➤ Industrial Designers Society of America, 45195 Business Court, Suite 250, Dulles, VA 20166-6717. Internet:**http://www.idsa.org**

For general information about art and design and a list of accredited college-level programs, contact:

➤ National Association of Schools of Art and Design, 11250 Roger Bacon Dr., Suite 21, Reston, VA 20190-5248. Internet: **http://nasad.arts-accredit.org**